Asia Information System Journal
Volume 1, Issue 2(2022), 80-85
http://ejournal.radenintan.ac.id/index.php/AISJ/index

AISJ Asia Information System Journal
e-ISSN 2963-8593
p-ISSN XXXX-XXXX

PROTOTYPING METHOD IMPLEMENTATION IN HEALTH LABORATORY SERVICE INFORMATION SYSTEM AT LAMPUNG PROVINCE

Gustrio Saputra[1]
Diniyyah Lampung Institute of Technology and Business, Jl. Raya Negeri Sakti KM 16 Gedong Tataan, Pesawaran 35366, INDONESIA

Ahmat Suhelmi[2]
Raden Intan State Islamic University Lampung, Jl. Letkol Endo Suratmin Bandar Lampung 35131, INDONESIA

Nizamiyati[3]
Diniyyah Lampung Institute of Technology and Business, Jl. Raya Negeri Sakti KM 16 Gedong Tataan, Pesawaran 35366, INDONESIA

Ida Ayu Puspitasari[4]
Aisyah Pringsewu University, Jl. A Yani No. 1 A Tambak Rejo, Wonodadi, Lampung 35372, INDONESIA

Williams Howards[4]
University of London, Senate House Malet Street London WC1E 7HU, UNITED KINGDOM

Article Info

Article history:

Received: August 6th,2022
Revised: October 8th, 2022
Accepted: November 4th, 2022

Keywords:

Health Laboratory,
Information Systems,
Prototype,
Mobile Application,
Services

Abstract

UPTD Lampung Province Health Laboratory Center is a health laboratory examination service unit including Complete Urine Laboratory, Blood Chemistry, Microbiology, Body Fluid Analysis, Culture and Identification, Hematology, Health Chemistry, Immunology / Serology and medical check-up services. With the implementation of the application of the prototyping method in the health laboratory service information system, it can minimize costs and operational time, of course, it can be accessed anywhere and anytime. This laboratory service information system was built using PHP, MySQL and bootstrap while the development method was Prototype. The laboratory service information system at the Mobile-Based UPTD Health Laboratory Center for Lampung Province can speed up the administrative service process in terms of registration of examinations according to the type of patient examination, lab examination results, payments and patient consultations which can be done online without having to come.

To cite this article:

INTRODUCTION

In the medical world, the use of information systems will speed up the work of health workers. The use of this information system allows health workers to carry out more tests in a short time and the results are also more accurate and reliable than laboratory systems. Laboratories are now organized with a system of programs and computers that exchange patient data, test requests, and test results which are better known as laboratory information systems[1] The UPTD Central Laboratory for Health in Lampung Province is a health laboratory examination service unit including Complete Urine Laboratory, Blood Chemistry, Microbiology, Body Fluid Analysis, Culture and Identification, Hematology, Health Chemistry, Immunology / Serology and medical check-up services. UPTD Lampung Province Health Laboratory Center is located at Jalan Dr. Sam Ratulangi 103 Bandar Lampung.

In the registration process, the patient must come directly and fill out the form manually, in the ongoing process there are problems, namely, it takes a long time because the patient's data is still written in the form and there is no complete information about the time of the examination and the results of the examination. In addition, in the patient examination process, no system is integrated into each section so it takes time to deliver examination results and other files, and no system can store files in a computerized manner which can reduce stacking and search

- **Corresponding author:**
Gustrio Saputra, Software Engineering Study Program, Institut Teknologi dan Bisnis Diniyyah Lampung, Jl. Raya Negeri Sakti KM 16 Gedong Tataan Pesawaran, INDONESIA. ✉ firgi@instidla.ac.id.

for files. In addition, patients have to come directly just to take the results of the examination which is very time-consuming and costly[2].

Related research Several studies that have been conducted about laboratory data processing systems are as follows:

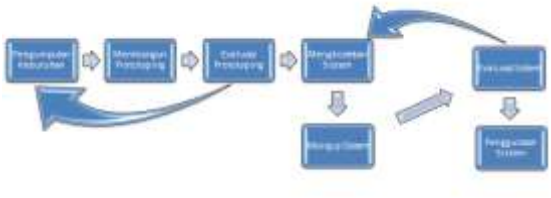
a) Rini Suwartika Kusumadiarti and Rendra Ripandi (2019) researched the Design and building of Laboratory Medical Support Service Information Systems at the Kopo Bandung Community Health Center. This research aims to design and build an implementation information system for laboratory medical support services at UPT Puskesmas Kopo Bandung Data collection techniques utilizing observation, interviews and literature study The software development method uses the *waterfall* with *Data Flow Diagrams* (DFD) as *softwar*e suggestions given to overcome problems in the system laboratory medical support services are: There is a need for system development in a better direction[3].
b) Based Laboratory Information Systems *Web* to Speed Up the Administrative Process of Testing Services an. So far, the administrative process for testing services is still conventional, so errors often occur in typing certificates and the administrative process takes longer. In 2017 there were 10.15% typing errors. To speed up the process of testing services and minimize typo errors in certificates, the Medan Baristand Industry needs to implement a Laboratory Information System. This Laboratory Information System will be integrated between sample recipients, treasurers, laboratories and typing certificates. After this Laboratory Information System is running[4].
c) Yulinda, Erlin Setyaningsih (2017), Design of the Laboratory Information System for the North Penajam Paser Regional General Hospital. The purpose of this research is to design and create laboratory applications that can facilitate the work of laboratory personnel in managing data. The research method used is literature study, namely by studying literature theories and books related to practical work objects as the basis for this research, field studies are carried out by examining agencies/companies directly and the SDLC *(System Development Life Cycle))* or often called the waterfall approach (*waterfall*) is a simple classic model with a linear system flow, the output of each stage is the input for the next stage, namely system analysis, application design, programming, program testing and program installation. The results showed that the design of a computerized laboratory application made it easier for the laboratory to carry out its duties which included patient data, visits, reagents and test parameters so that it was more effective and efficient in carrying out work[5].
d) Marliana Budhiningtias Winanti, Meylan Lesnusa (2019), patient data service information system in the laboratory (UPTD) community pulmonary health centre (BKPM) Maluku province. Manual data storage systems that retrieve patient data are considered ineffective, processing patient examination data is still considered long because the process is complete. Therefore, an information system was created to assist institutions in overcoming problems and helping some of the difficulties that exist. The inspection data processing system is designed to assist in the computerized process of patient data input, data storage, and so on. The method used is the structured method and the development system is the Prototype method[6].
e) Erliza Yubarda, Mira Ros Yanti (2019), Information System for Anatomical Pathology Laboratory Examination Results at the Hospital. Jewel of the heart. The patient examination system for Anatomical Pathology at Permata Hati Hospital in data entry has been computerized using the Microsoft Excel application. However, there is still a lack of ability to optimize these applications, including causing obstacles that are often encountered such as the length of time needed to process the input results of Anatomical Pathology patient examinations, repeated patient data input and laboratory staff who often experience difficulties when searching for data and when compiling data file of Anatomical Pathology patient examination results when using a running system. This research was conducted to develop applications for processing data on the results of Anatomical

Pathology examinations where this field is very helpful in making a diagnosis (including staging) and determining the right treatment for cancer suffered by the patient. It is hoped that this research can produce optimal results in processing patient data which can speed up input time and produce more accurate output which previously took quite a long time to process. The existence of this system can make it easier for laboratory staff to process and search data more quickly to produce more accurate patient examination results[7].

METHOD

1. Research Methodology

The problem-solving approach used in this study is the *Prototype*[8]. This methodology has several important steps that must be carried out in the Implementation of the Application of the *Prototyping* in the Health Laboratory Service Information System. Based UPTD Lampung Provincial Health Laboratory Center *Mobile*. The process stages that will be used include the following:



Model *Prototype*.

2. Gathering Requirements The

the developer defines the format of the entire software, identifies all requirements, and outlines the system to be built. The following are the steps taken in gathering needs:

a) Interview Method Interviews
were conducted by interviewing parties related to the use of information systems at the UPTD Health Laboratory Center for Lampung Province. The parties interviewed included: the administration section, and administrative staff. This interview technique was conducted to obtain the latest information regarding the problem of patient registration business processes, patient examinations and consultations[9].

b) Observation Method
Direct observation of the object under study so that it can be understood how business processes work.

c) Literature Review Literature
review is done by reading, quoting, and collecting data theoretically on documentation, the internet and studying reference documents and other records that support the research process.

3. Building Prototyping

Building *Prototyping* by making the proposed system design focus on the objects or actors involved, by making input and output formats including registration, inspection and consultation using Use Case Diagrams[10]

Figure 2. Use Case Registration Diagram

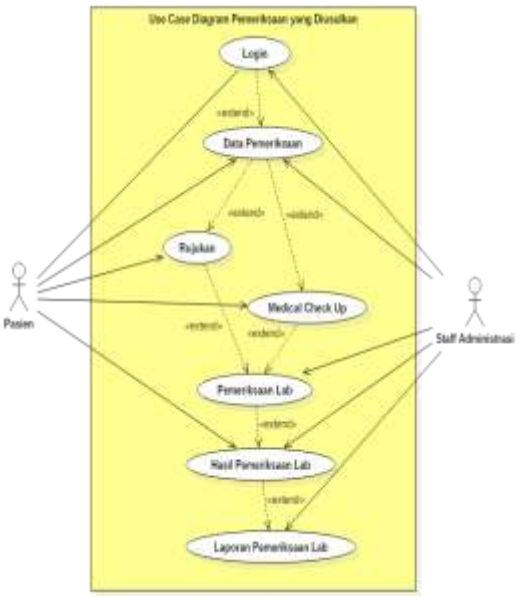


Figure 3. Use Case Inspection Diagram

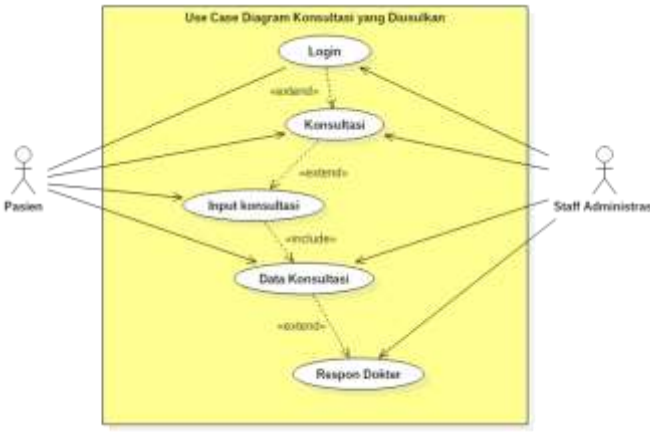


Figure 4. Use Case Consultation Diagram

RESULTS AND DISCUSSION

a) Main Page The

the image below is the main page of the system. The index/main page display can be seen in Figure 5.

Figure 5 Main Page.

b) Administrative Staff Page Administrative

staff page after login. The appearance of the administration staff home can be seen in Figure 6

Figure 6 Administration Staff

c) Page Patient Data

data management page is used to manage patient data. The display of patient data management can be seen in Figure 7

Figure 7. Patient Data Management

d) Page Payment Data Management

Page Page for administrative staff to manage patient payment data. The display of managing payment data can be seen in Figure 8.

Figure 8. Payment Data Management

e) Page Lab Examination Management

Page Page for administrative staff to view patient lab examination data. The display of the manage lab examination page can be seen in Figure 9.

Figure 9. Lab Examination Management

f) Page Lab Result Report

Page Page for administrative staff to manage patient lab result data. The display of the lab results reports page can be seen in Figure 10.

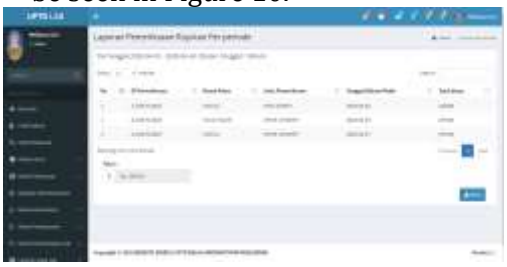


Figure 10. Lab results report

g) page Doctor Main

Page Doctor's main page after logging in. The doctor's home display can be seen in Figure 11

Figure 11. Doctor's Main

h) Page Patient

Main Page Patient's main page after logging in. The patient's main page display can be seen in Figure 12.

Figure 12. Patient Main

i) Page Examination Results

Page Page for patients to print examination results. The display of the inspection results can be seen in Figure 13.

Figure 13. Inspection Results Page

5. Conclusion

a) The system to be built is aimed at carrying out structured administrative activities, so that better and maximum work processes can be produced by using centralized data storage which can facilitate activities adding data, searching, and publishing data using computer technology.

b) With the Implementation of the Application of the *Prototyping* Based UPTD Lampung Provincial Health Laboratory Center, *Mobile* it can speed up the administrative service process in terms of registration of examinations according to the type of patient examination, lab examination results, payments and patient consultations which can be done online without having to come.

REFERENCES

[1] S. Jurusan, S. Informasi, S. Tinggi, M. Informatika, and K. Surabaya, "Rancang Bangun Sistem Informasi Laboratorium Klinik Berbasis Web Pada Laboratorium Klinik Utama SAFIRAH Sidoarjo."

[2] I. Saritas, I. A. Ozkan, N. Allahverdi, and M. Argindogan, "Determination of the drug dose by fuzzy expert system in treatment of chronic intestine inflammation," *J. Intell. Manuf.*, vol. 20, no. 2, pp. 169–176, 2009, doi: 10.1007/s10845-008-0226-x.

[3] R. S. Kusumadiarti and R. Ripandi, "Rancang Bangun Sistem Informasi Pelayanan Penunjang Medis Laboratorium Di Puskesmas Kopo Bandung," *J. Petik*, vol. 5, no. 1, pp. 48–54, 2019, doi: 10.31980/jpetik.v5i1.441.

[4] D. Kusumawaty, "Perancangan Sistem Informasi Laboratorium Berbasis Web untuk Mempercepat Proses Administrasi Pelayanan Jasa Pengujian TALENTA Conference Series Perancangan Sistem Informasi Laboratorium Berbasis Web untuk Mempercepat Proses Administrasi Pelayanan Jasa Pen," vol. 2, no. 3, 2019, doi: 10.32734/ee.v2i3.707.

[5] E. Setyaningsih, "Rancang Bangun Sistem Informasi Laboratorium Rumah Sakit Umum Daerah Penajam Paser Utara," vol. 1, pp. 15–20, 2017.

[6] M. B. Winanti and M. Lesnusa, "Sistem Informasi Pelayanan Data Pasien Pada Laboratorium Uptd Balai Kesehatan Paru Masyarakat (BKPM) Provinsi Maluku," vol. 9, no. April, pp. 1–8, 2019.

[7] E. Yubarda and M. R. Yanti, "Sistem Informasi Hasil Pemeriksaan Laboratorium Patologi Anatomi," *Jar. Sist. Inf. Robot. (JSR)*, vol. 3, no. 1, pp. 177–183, 2019.

[8] L. Hakim and M. A. Oktariandi,

"Perancangan Sistem Tracer Alumni Stmik Musi Rawas Berbasis Web Mobile," *Jusim*, vol. 2, no. 2, pp. 108–116, 2017.

[9] M. el-K. Kesuma, E. Octafiona, and R. P. Sari, "Development Of Module Sharaf Using A Deductive Approach In The Diniyyah Putri Lampung Boarding School," *An Nabighoh*, vol. 23, no. 1, pp. 1–16, 2021, doi: https://doi.org/10.32332/an-nabighoh.v23i1.2190.

[10] M. el-K. Kesuma and R. P. Sari, "Pengembangan Modul Sharaf Dengan Pendekatan Deduktif Di Pondok Modern Madinah Lampung," *Stud. Arab*, vol. 11, no. 1, pp. 27–36, 2020, doi: 10.35891/sa.v11i1.1944.